

TRAINING METHADODOLOGY

Lectures
Practical & Exercises (Hands on Experience)
Assessment Test

DURATION : 60 working days (12 weeks)

TIMINGS : 06.00 PM – 08.00PM

PARTICIPANTS

Degree / Diploma pass out/ Job Seekers
Persons knowing basics of Electrical /Electronics/Instrumentation

REGISTRATION

On first come first serve basis

COURSE FEE : Rs.15000/- (service tax extra)

It will cover course material, stationery and Tea.

COURSE-COORDINATOR

Sr. Manager (Marketing)

CRISP Shyamla Hills Bhopal

E-mail : crisp@crispindia.com, Phone No.0755-2661412

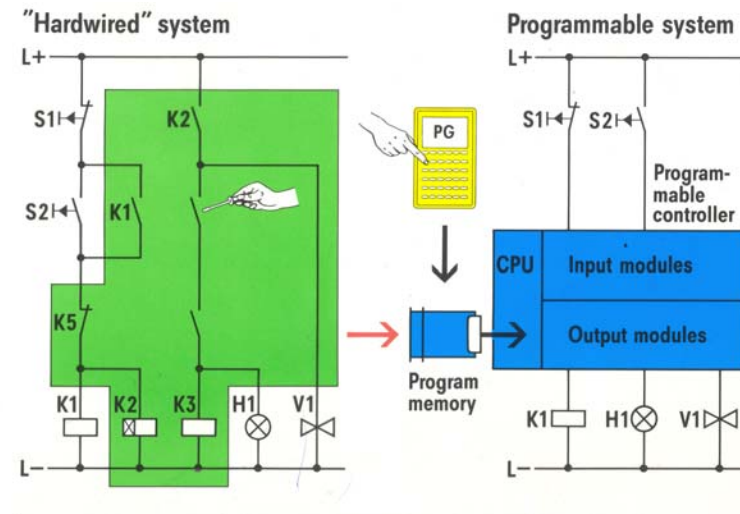
CRISP Bhopal

Announces

Training Program

on

Mechatronics (24th Sep – 14th Dec '07)



INTRODUCTION

New era of Industrial Automation has led to the acquisition of sophisticated electrical controls. There is good employment potential in Industrial Automation in process Industries. CRISP Bhopal has set up state of art facilities in field of Mechatronics to impart training, keeping these aspects under consideration.

COURSE OBJECTIVE

- ✓ To enhance skills to diagnose/trouble shoot the fault in electrical/electronics /instrumentation field.
- ✓ To develop competence in repair techniques.

COURSE CONTENTS

Module I : Electrical Control & Relay Logic Application

- ✓ Draw, Read and Interpret electrical drawings.
- ✓ Protection circuits, Fuses, MCB, MCCB, MPCB, Overload relay.
- ✓ Magnetic contactor, its testing, Relay, Simple start/Stop control, Wiring for latched start/stop circuit
- ✓ DOL starters for single and three phase.
- ✓ Timer & its application, Star-Delta starter.
- ✓ Different types of logical wiring.
- ✓ Pressure transducer, Temperature Transmitter

Module II : PLC Programming & Application

- ✓ Introduction to PLC
- ✓ Need & Advantages of PLC
- ✓ PLC Hardware structure & Operating Principle
- ✓ Overview of various Series of PLC
- ✓ PLC Installation Guidelines and I/O wiring
- ✓ Loading & Establishing Communication
- ✓ Software with PLC
- ✓ Project Configuration
- ✓ Digital I/O Addressing
- ✓ Programming Languages STL, LAD & CSF/FBD
- ✓ Memory Organization PII & PIQ
- ✓ Bit, Byte, Word & Dword Addressing
- ✓ Basic Operations AND, OR, AN, ON, ~
- ✓ Set & Reset Operations
- ✓ Load & Transfer Operations
- ✓ Comparison & Arithmetic Operations
- ✓ Configuration of SP SE, SD, SS & SF Timers
- ✓ Up & Down Counter Configurations

Module III : Electronics Maintenance

- ✓ Identification and testing of electronic components - resistors, preset, potentiometer, capacitors, trimmer, coil, transformer, fuses, diodes, zeners, transistors, SCR, triac, digital and analog IC's
- ✓ Correct use of test and measuring instruments - Digital Multimeters, Oscilloscope, Function & Signal generator, LCR meter, IC testers.
- ✓ Testing and troubleshooting of regulated power supplies
- ✓ Assembly and testing of Op-Amp/Digital Electronic circuits
- ✓ Introduction to Electronic design and simulation software.

Module IV : Industrial Hydraulics

- ✓ Fundamentals of hydraulics: Principle construction
- ✓ Hydraulic system auxiliaries: Reservoirs, filters, coolers, Instrumentation and accumulators-
- ✓ Hydraulic pumps: Pump basics, centrifugal pumps, positive displacement pumps: Gear, vane, piston

- ✓ Pressure and flow control.
- ✓ Actuators: Linear actuators, hydraulic motors, Hydraulic drives.
- ✓ ISO symbol, circuit design and hydraulic circuit reading Principle & construction of Solenoid valves, Stack valves, Modular valves, Cartridge valves.
- ✓ Speed control methods, Sequencing, synchronizing methods and hydrostatic drives
- ✓ Mobile systems, Pump controls, Flow load compensation, Pressure compensation.
- ✓ General troubleshooting and maintenance of hydraulic system Hydraulic fluids, system hygiene, effective filtration,

Module V : Industrial Pneumatics

- Fundamentals of pneumatics
- Compressors: Reciprocating, Vane, Screw, selection criteria
- Air dryers: Necessity, Descant, Refrigerant, condensate calculation
- Air Receiver: Function, Size calculation
- Piping Network: Characteristics of good pipe line installation, Types, Header size calculation
- FRL (Service Unit): Working principle & selection
- Actuators: Single Acting and Double Acting Cylinder, Size Calculation, Causes of failure
- Direction control valves: 2/2 way, 3/2 way, 5/2 way, Actuation Mechanism, ISO Symbols interpretation
- Flow control: Working principle and application
- Logic Valves and applications:
- Circuit design for simple applications
- Plant related pneumatic circuit reading
- Process valves pneumatic actuation: air to open and air to close.
- General trouble shooting & maintenance of pneumatic systems

Module VI : Mechanical Maintenance

- Bearings and Lubrications- types & identification
- Maintenance, Mounting & removing
- Mechanical Power Transmission (v-belts, chains and gearboxes) types of drives, advantages & Disadvantages
- Selection of drives and application
- Repair & Maintenance
- Drive alignment
- Pumps -types and application
- Centrifugal & Positive displacement
- Priming & purging , Repair and maintenance
- Seals Systems (lubrication and product) Sealing devices & sealing techniques, Static seals ad dynamic seals
- Mechanical seals, installation and maintenance
- Compressors (reciprocating and centrifugal) -Types and applications, Repair and maintenance
- Compressor lubrication and controls
- Fans and Blowers Types and applications Inspection & Testing of fans and blowers
- Valves- Various types of valves and selection, Fittings and gaskets
- Repair and maintenance.

Module VI : Power Electronics & Drives

- Fundamentals of power electronic devices – diode, BJT, Thyristor, IGBT, MOSFET
- Need & expectation from variable speed drives
- Controlled & uncontrolled converter circuits
- Inverters and fundamentals of motors
- Connection for communication interface, parameterization procedures for drives, quick parameterization
- Application configuration,
- Troubleshooting and fault diagnosis